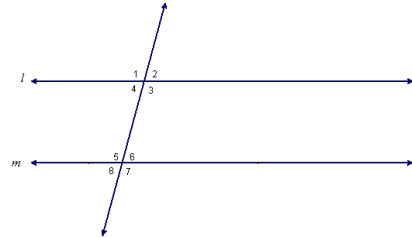


If block day permits, then
use gsp to develop
postulates and theorems
about parallel lines.
If not, then just do
teacher centered gsp.

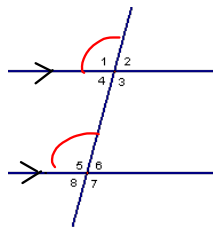
gsp

3.2 Angles and Parallel Lines

 $l \parallel m$ 

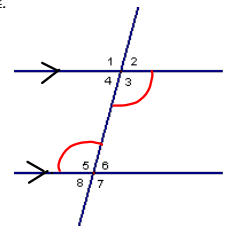
Postulate 3.1-If 2 parallel lines are cut by a transversal, then the corresponding angles are congruent.

Abbreviated: If \parallel , corresponding \angle s are \cong .



Theorem 3.1-If 2 parallel lines are cut by a transversal, then the alternate interior angles are congruent.

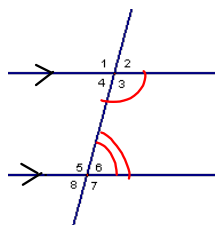
Abbreviated: If \parallel , alternate interior \angle s are \cong .



Theorem 3.2-If 2 parallel lines are cut by a transversal, then the same-side (consecutive) interior angles are supplementary.

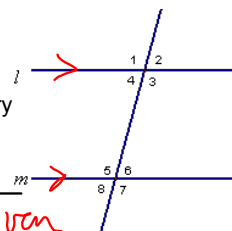
Abbreviated: If \parallel , s-side (consecutive) interior \angle s are supplementary.

Let's prove this theorem.



Given: $l \parallel m$

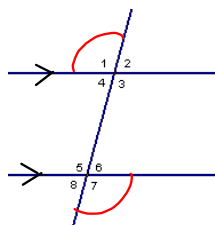
Prove: $\angle 3$ and $\angle 6$ are supplementary



Statements	Reasons
① $l \parallel m$	① Given
② $\angle 5$ & $\angle 6$ are suppl.	② Suppl. thm
③ $\angle 5 \cong \angle 3$	③ If \parallel , alt int \angle s \cong
④ $m\angle 5 + m\angle 6 = 180$	④ def of suppl
⑤ $m\angle 5 = m\angle 3$	⑤ def of \cong
⑥ $m\angle 3 + m\angle 6 = 180$	⑥ subst.
⑦ $\angle 3$ & $\angle 6$ are suppl	⑦ def of suppl.

Theorem 3.3-If 2 parallel lines are cut by a transversal, then the alternate exterior angles are congruent.

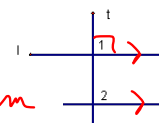
Abbreviated: If \parallel , alternate exterior \angle s are \cong .



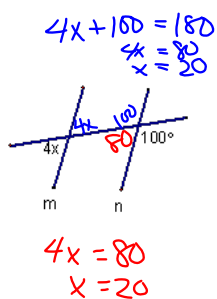
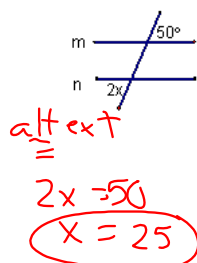
Theorem 3.4-Perpendicular Transversal Theorem-In a plane, if a line is \perp to one of 2 \parallel lines, then it is \perp to the other line.

Given: $l \parallel m$; $t \perp l$

Prove: $m \perp t$



Statements	Reasons
1. $l \parallel m$; $t \perp l$	1. Given
2. $\angle 1$ is a right \angle	2. def of \perp
3. $m\angle 1 = 90$	3. Def. of right \angle
4. $\angle 1 \cong \angle 2$	4. If \parallel , corr \angle s \cong
5. $m\angle 1 = m\angle 2$	5. def of \cong
6. $m\angle 2 = 90$	6. Substitution
7. $\angle 2$ is a right \angle	7. def of R \angle
8. $m \perp t$	8. def of \perp

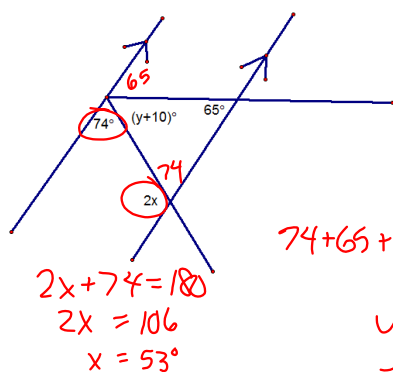
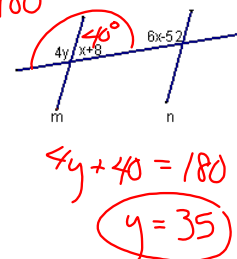
Solve for x. $m \parallel n$ Solve for x and/or y. $m \parallel n$

$$x + 8 + 6x - 52 = 180$$

$$7x - 44 = 180$$

$$7x = 224$$

$$x = 32$$

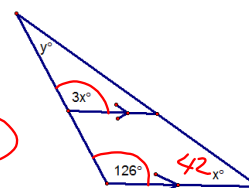


$$74 + 65 + y + 10 = 180$$

$$y = 31$$

$$3x = 126$$

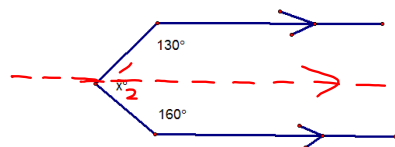
$$x = 42$$



$$y + 126 + 42 = 180$$

$$y = 12$$

Find the measure of x.



$$m\angle 1 + 130 = 180$$

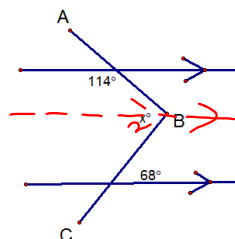
$$m\angle 1 = 50$$

$$m\angle 2 + 160 = 180$$

$$m\angle 2 = 20$$

$$X = 50 + 20$$

$$70^\circ$$

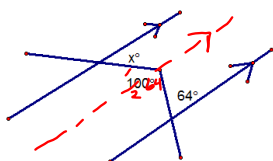


$$m\angle 1 + 114 = 180$$

$$m\angle 1 = 66$$

$$m\angle 2 = 68$$

$$X = 134$$



$$m\angle 1 = X$$

$$m\angle 2 = 64$$

$$\begin{array}{r} 100 \\ - 64 \\ \hline 36^\circ \end{array}$$

Homework:

p. 136-137

#s 14-25, 32-36, 39

Attachments

parallel_line_sketch_for_NOTES.gsp